



PCT/93/04/511257  
Rec'd PCT/PTO 09 OCT 2004  
GB03/1621 #2

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The Patent Office  
Concept House  
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REC'D 03 JUL 2003

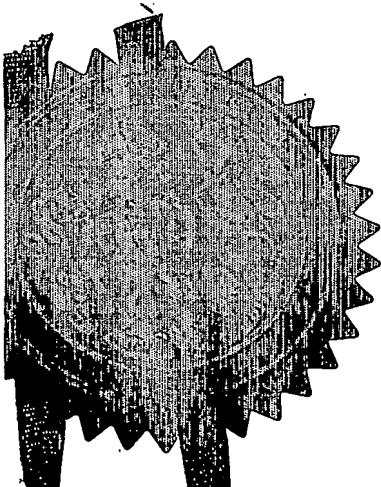
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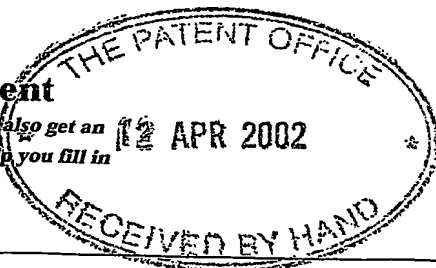
*Hebehen*

Dated 28 May 2003

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**Request for grant of a patent**

(See the notes on the back of this form. You can also get an explanatory leaflet from the Patent Office to help you fill in this form)



The Patent Office

Cardiff Road  
Newport  
South Wales  
NP9 1RH

1. Your reference

ABC/PBT39 20661

2. Patent application number

(The Patent Office will fill in this part)

0208508.2

12 APR 2002

3. Full name, address and postcode of the or of each applicant (underline all surnames)

PBT (IP) Limited

1 Astra Centre  
Edinburgh Way  
Harlow  
Essex  
CM20 2BN

Patents ADP number (if you know it)

If the applicant is a corporate body, give the country/state of its incorporation

7645 336001

4. Title of the invention

ELECTRICALLY CONTROLLED DOOR  
LOCK

5. Name of your agent (if you have one)

"Address for service" in the United Kingdom  
to which all correspondence should be sent  
(including the postcode)A A Thornton & Co  
235 High Holborn  
London  
WC1V 7LE

Patents ADP number (if you know it)

75501

6. If you are declaring priority from one or more earlier patent applications, give the country and the date of filing of the or of each of these earlier applications and (if you know it) the or each application number

Country

Priority application number  
(if you know it)Date of filing  
(day / month / year)

7. If this application is divided or otherwise derived from an earlier UK application, give the number and the filing date of the earlier application

Number of earlier application

Date of filing  
(day / month / year)

8. Is a statement of inventorship and of right to grant of a patent required in support of this request? (Answer 'Yes' if:

yes

- a) any applicant named in part 3 is not an inventor, or
- b) there is an inventor who is not named as an applicant, or

- c) any named applicant is a corporate body.

See note (d))


9. Enter the number of sheets for any of the following items you are filing with this form. Do not count copies of the same document

Continuation sheets of this form

Description 4

Claim(s)

Abstract

Drawing(s) 1 + 1 

10. If you are also filing any of the following, state how many against each item.

Priority documents

Translations of priority documents

Statement of inventorship and right to grant of a patent (*Patents Form 7/77*)

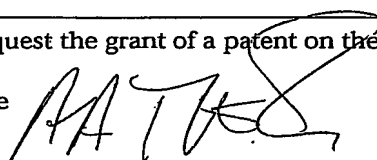
Request for preliminary examination and search (*Patents Form 9/77*)

Request for substantive examination (*Patents Form 10/77*)

Any other documents  
(please specify)

11. I/We request the grant of a patent on the basis of this application.

Signature



Date

12 April 2002

12. Name and daytime telephone number of person to contact in the United Kingdom

Andrew B Crawford - 020 7405 4044

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**Notes**

- If you need help to fill in this form or you have any questions, please contact the Patent Office on 0645 500505.*
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## ELECTRICALLY CONTROLLED DOOR LOCK

The present invention relates to door locks and more particularly to a door lock which is electrically controlled.

5        It is known to provide door locks which are a combination of a conventional door lock which can be activated by a key but which can also be released by means of an electrical control signal. These are common in apartment blocks.

10        Customarily, the electrical control signal is used to move a member out of position to such an extent that the locking member attached to the door no longer prevents the door being pushed open.

15        Despite the fact that such locks have been available for a considerable number of years, there still exists the need to provide a reliable electrically actuated arrangement at low cost and particularly one which can be installed in either a normally closed or normally open condition.

The present invention provides an electrically activated door lock in which a piezo electric member is used to control movement of a blocking member which in turn controls the latching of the door.

20        Preferably, the blocking member and the retaining member are shaped so as to permit movement of the blocking member to either release the locking member to allow a door to be opened or engage the member so as to prevent the door being opened.

25        In order that the present invention be more readily understood, an embodiment thereof will now be described by way of example with reference to the accompanying drawings in which Fig 1 shows a diagrammatic representation of an electrically activated latching mechanism according to the present invention and Fig 2 shows diagrammatically a reversing mechanism capable of altering the

operation of the mechanism shown in Fig 1 from a normally open condition to a normally closed condition.

Referring now to Fig 1, this shows diagrammatically a door 10 provided with a lock 11 having a retractable locking member 12 which is normally retracted by means of a manually engageable knob 13 or a key in the conventional manner. The latching member 12 is received in a recess in a door jamb 14 and in the normal condition is arranged to engage with a member 15 which prevents the door being opened unless the latching member 12 is retracted.

In order to electrically control the lock, the member 15 is pivotal in the direction of the arrow A if it is desired to permit someone without a key opening the door. The pivotal movement is sufficient to allow the latching member 12 to clear the member 15 on simply pushing the door.

Movement of the member 15 in the direction of the arrow A is controlled by a detent 20 which engages the end of the member 15 but is capable of being moved out of the way of the end of the member 15 so as to permit the member 15 to rotate in the direction of the arrow A.

Movement of the detent 20 is in turn electrically controlled by means of a blocking member 21. In one position of the blocking member 21 rotational movement of the detent 20 is inhibited due to engagement with the blocking member 21. This in turn inhibits rotational movement of the member 15 in the direction of the arrow A when the door is pushed. However, if an electrical signal is supplied to a suitable actuator, the blocking member 21 is moved to a second position where, if the door is pushed, the member 15 attempts to move in the direction of the arrow A. This causes the detent 20 to attempt to move arcuately upwards which it can now do due to the fact that the blocking member has moved to its second position. In this way, the door can simply be pushed open.

Electrical control of the blocking member 21 is achieved by means of a piezo-electric actuator which, when pulsed, will cause the blocking member to move from the first to the second position. To ensure that mechanical forces derived from the locking member are not transferred to the piezo-electric actuator 24, the blocking member 21 is resiliently coupled to the actuator 24 and in this case this is achieved by means of a spring 25.

A particular feature of the preferred embodiment is that the contact surfaces of the blocking member 21 and the detent 20 are shaped so that simply by presetting the orientation of the blocking member 21 and detent 20 the lock can operate so that the door can either be in a normally open or a normally closed condition and the application of the electrical control signal locks or opens the door as desired. In this embodiment this is achieved by the member 21 being provided with two projecting teeth 30 as shown in Fig 2 which are spaced apart. The contact surface of the detent 20 is provided with mating projections and recesses with the recesses 31 being located at the same pitch as the projections 30 on the blocking member 21 and consequently spaced apart by the same amount. By arranging that on initial installation the members 21 and 20 are arranged so that the projections 30 on the member 21 are normally arranged to be received in recesses 31 in the initial unenergised condition of the piezo-electric member 24, the door will be a normally open door which when the blocking member is moved in the direction of the arrow X in Fig 2 results in the projections 30 meeting the projections 32 on the detent 20 in the event that the door is pushed which prevents the detent from rotating and consequently the door from being opened. It will be appreciated that by initially setting the reverse conditions the door will be normally closed but will be capable of being pushed open when the blocking member is moved under the control of the piezo-electric actuator so that the projections 30 mate with the recesses 31.

The manner in which the operation of the lock can be preset is a matter of design choice but could be achieved simply by providing the pivot of the detent 20 in the form of a bar along which the detent 20 is slid. Likewise, the blocking member 21 could be moved if it were located in a slide way.

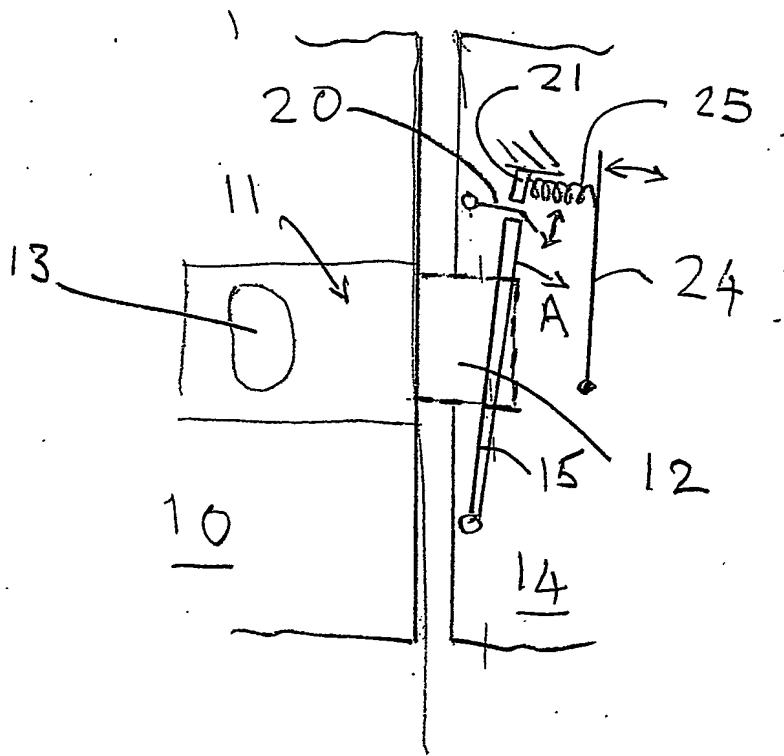


FIG. 1.

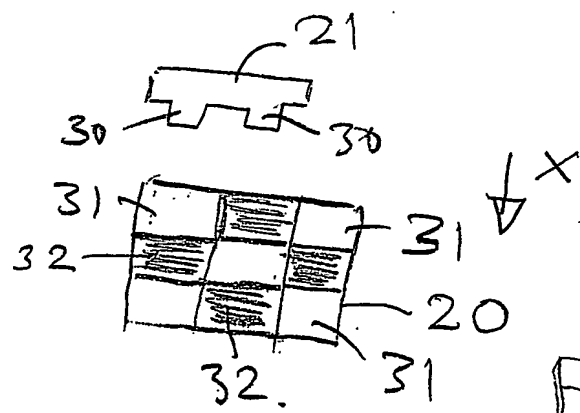


FIG. 2.

THE PATENT OFFICE  
29 MAY 2003  
Department of Patents  
International Unit

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## INTERNATIONAL SEARCH REPORT

Rec'd PCT/PTO 09 OCT 2004

International Application No

PCT/GB 03/01621

**A. CLASSIFICATION OF SUBJECT MATTER**  
IPC 7 E05B47/00

According to International Patent Classification (IPC) or to both national classification and IPC

**B. FIELDS SEARCHED**

Minimum documentation searched (classification system followed by classification symbols)  
IPC 7 E05B

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data, PAJ

**C. DOCUMENTS CONSIDERED TO BE RELEVANT**

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	DE 11 38 334 B (FUSS FRITZ KG) 18 October 1962 (1962-10-18) the whole document ---	1
X	FR 2 726 847 A (NUOVA FEB FABBRICA ELETTRORAPPA) 15 May 1996 (1996-05-15) the whole document ---	1
X	EP 0 851 077 A (NUOVA F E B S R L FABBRICA ELE) 1 July 1998 (1998-07-01) the whole document ---	1
A	EP 0 757 145 A (GEZE GMBH & CO) 5 February 1997 (1997-02-05) the whole document -----	1,2



Further documents are listed in the continuation of box C.



Patent family members are listed in annex.

**\* Special categories of cited documents :**

- \*A\* document defining the general state of the art which is not considered to be of particular relevance
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- \*O\* document referring to an oral disclosure, use, exhibition or other means
- \*P\* document published prior to the international filing date but later than the priority date claimed

\*T\* later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

\*X\* document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

\*Y\* document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

\* & \* document member of the same patent family

Date of the actual completion of the international search

5 August 2003

Date of mailing of the international search report

12/08/2003

Name and mailing address of the ISA

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Authorized officer

Henkes, R

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/GB 03/01621

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
DE 1138334	B	18-10-1962	NONE	
FR 2726847	A	15-05-1996	IT B0940502 A1	14-05-1996
			ES 2133031 A1	16-08-1999
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			DE 69617446 D1	10-01-2002
			DE 69617446 T2	04-04-2002
			ES 2163608 T3	01-02-2002
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			DE 19617150 A1	06-02-1997
			EP 0757145 A2	05-02-1997